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Engineering Note

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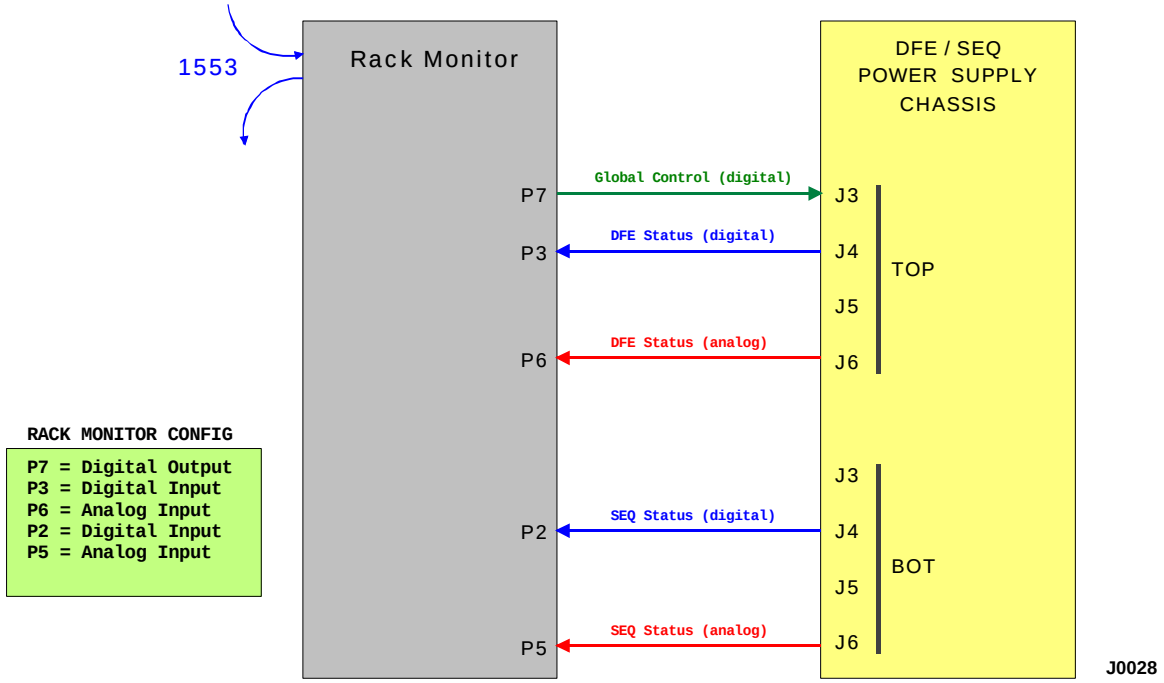
Project: DFE/SEQ Power supplies
Doc. No: 2001-02-16a

Subject: How the DFE/SEQ Power Supply Chassis to Rack Monitor Interface

The DFE and Sequencer Power supplies are contained in the same chassis box, located on the center platform wall behind racks PC19/PC20 and PC03/PC03. The chassis box located behind PC19/PC20 supplies power to four Sequencer crates and two DFE crates located in PC19/PC20. Likewise, the chassis located behind PC03/PC04 controls four Sequencers and two DFE crates in PC03/PC04. For more information on how the power supplies are assigned to racks, refer to my engineering note 2001-01-30a.

Each crate requires one power supply in the chassis. Each power supply has two outputs, primary and secondary. One rack monitor controls one power supply chassis as shown below:



The rack monitor can control:

1. Enable and disable the power supply outputs. Outputs cannot be controlled individually – either they are all enabled or disabled. This applies to all supplies in a chassis.
2. Reset. Asserting reset clears the Trip bits.

The rack monitor can read back:

1. Status of the power supply outputs.
2. Whether or not the chassis is in "local" or "remote" mode.
3. Reset status.
4. Trip status. Each supply has two outputs (Primary, Secondary). Each output has a bit that says that it tripped. To determine what kind of trip is was, see below.
5. Type of Trip. Over Current or Over Voltage.
6. Supply current and Supply voltage. These are analog voltages.

Operation

Real time current and voltage can be read back as analog voltages at any time.

If a power supply output exceeds a pre-determined current or voltage level for more than 30ms, the logic in the chassis box considers this a "trip" and disables the outputs of **ALL supplies in the chassis**. It will then set the appropriate trip bit to identify the faulty output. It will then set a bit describing the type of trip – OverVoltage or OverCurrent.

All supplies in thc chassis will remain with their outputs disabled until RESET is asserted.

NOTE: The OverVoltage or OverCurrent bits are **exclusive** with respect to the DFE supplies and the SEQ supplies. For example, if a DFE supply trips due to an over voltage condition then the OverVoltage bit on P3 pin 15 will be set. The OverVoltage bit on P2 pin 15 will ***NOT*** be set.

Rack Monitor Pinouts

connector	pin	description	type	comment
P7	1	Supply Output Enable (Enabled=1 / Disabled=0)	digitial out	controls all supplies
P7	2	RESET (Reset=1)	digitial out	controls all supplies
P7	3-16	unused digital output	digitial out	
P7	17-19	no connect	n.c.	
P7	20-35	GND	GND	
P7	36-37	no connect	n.c.	

connector	pin	description	type	comment
P3	1	Supply Output Status (Enabled=1 / Disabled=0)	digital in	
P3	2	Operating Mode Status (Remote=1 / Local=0)	digital in	
P3	3-4	unused digital input	digital in	
P3	5	DFE supply, slot 5, +5V (secondary) trip=1	digital in	
P3	6	DFE supply, slot 5, +3.3V (primary) trip=1	digital in	
P3	7	DFE supply, slot 6, +5V (secondary) trip=1	digital in	
P3	8	DFE supply, slot 6, +3.3V (primary) trip=1	digital in	
P3	9-13	unused digital input	digital in	
P3	14	Reset status (Reset=1)	digital in	
P3	15	DFE OverVoltage status (Trip=1)	digital in	DFE supplies ONLY
P3	16	DFE OverCurrent status (Trip=1)	digital in	DFE supplies ONLY
P3	17-19	no connect	n.c.	
P3	20-35	GND	GND	
P3	36-37	no connect	n.c.	

connector	pin	description	scale	type
P6	1	DFE supply, slot 5, +5V (secondary) voltage	1x	analog input
P6	2	DFE supply, slot 5, +5V (secondary) current	1V / 100A	analog input
P6	3	DFE supply, slot 5, +3.3V (primary) voltage	1x	analog input
P6	4	DFE supply, slot 5, +3.3V (primary) current	1V / 100A	analog input
P6	5	DFE supply, slot 6, +5V (secondary) voltage	1x	analog input
P6	6	DFE supply, slot 6, +5V (secondary) current	1V / 100A	analog input
P6	7	DFE supply, slot 6, +3.3V (primary) voltage	1x	analog input
P6	8	DFE supply, slot 6, +3.3V (primary) current	1V / 100A	analog input
P6	9-16	unused analog input	n/a	analog input
P6	17-19	no connect	n/a	n.c.
P6	20-37	GND	n/a	GND

connector	pin	description	type	comment
P2	1	Supply Output Status (Enabled=1 / Disabled=0)	digitial in	copy of P3 pin 1
P2	2	Operating Mode Status (Remote=1 / Local=0)	digitial in	copy of P3 pin 2
P2	3-4	unused digital input	digitial in	
P2	5	SEQ supply, slot 1, 5.2V (secondary) trip=1	digitial in	
P2	6	SEQ supply, slot 1, +5V (primary) trip=1	digitial in	
P2	7	SEQ supply, slot 2, 5.2V (secondary) trip=1	digitial in	
P2	8	SEQ supply, slot 2, +5V (primary) trip=1	digitial in	
P2	9	SEQ supply, slot 3, 5.2V (secondary) trip=1	digitial in	
P2	10	SEQ supply, slot 3, +5V (primary) trip=1	digitial in	
P2	11	SEQ supply, slot 4, 5.2V (secondary) trip=1	digitial in	
P2	12	SEQ supply, slot 4, +5V (primary) trip=1	digitial in	
P2	13	unused digital input	digitial in	
P2	14	Reset status (Reset=1)	digitial in	copy of P3 pin 14
P2	15	SEQ OverVoltage status (Trip=1)	digitial in	SEQ supplies ONLY
P2	16	SEQ OverCurrent status (Trip=1)	digitial in	SEQ supplies ONLY
P2	17-19	no connect	n.c.	
P2	20-35	GND	GND	
P2	36-37	no connect	n.c.	

connector	pin	description	scale	type
P5	1	SEQ supply, slot 1, 5.2V (secondary) voltage	1x	analog input
P5	2	SEQ supply, slot 1, 5.2V (secondary) current	1V / 100A	analog input
P5	3	SEQ supply, slot 1, +5V (primary) voltage	1x	analog input
P5	4	SEQ supply, slot 1, +5V (primary) current	1V / 100A	analog input
P5	5	SEQ supply, slot 2, 5.2V (secondary) voltage	1x	analog input
P5	6	SEQ supply, slot 2, 5.2V (secondary) current	1V / 100A	analog input
P5	7	SEQ supply, slot 2, +5V (primary) voltage	1x	analog input
P5	8	SEQ supply, slot 2, +5V (primary) current	1V / 100A	analog input
P5	9	SEQ supply, slot 3, 5.2V (secondary) voltage	1x	analog input
P5	10	SEQ supply, slot 3, 5.2V (secondary) current	1V / 100A	analog input
P5	11	SEQ supply, slot 3, +5V (primary) voltage	1x	analog input
P5	12	SEQ supply, slot 3, +5V (primary) current	1V / 100A	analog input
P5	13	SEQ supply, slot 4, 5.2V (secondary) voltage	1x	analog input
P5	14	SEQ supply, slot 4, 5.2V (secondary) current	1V / 100A	analog input
P5	15	SEQ supply, slot 4, +5V (primary) voltage	1x	analog input
P5	16	SEQ supply, slot 4, +5V (primary) current	1V / 100A	analog input
P5	17-19	no connect	n/a	n.c.
P5	20-37	GND	n/a	GND